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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,140	08/18/2003	J. Richard Aylward	02103-519002 / AABOSS93-C	3288
26162 7590 01/07/2009 FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER KURR, JASON RICHARD	
			ART UNIT 2614	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 10/643,140	Applicant(s) AYLWARD ET AL.	
	Examiner JASON R. KURR	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 42-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 42-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/17/08 7/28/08 8/5/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 43 and 44 are objected to because of the following informalities:

Claim 43 recites the limitation "said first direction" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 43 recites the limitation "said second direction" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 44 recites the limitation "said first direction" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 44 recites the limitation "said direction" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 42 disclose "a nondirectional audio device, positioned inside said listening area and outside said first of said listening spaces, distant from said first of said listening spaces, for radiating sound waves corresponding to spectral components in a second non-bass frequency range of a second of said channels". The Examiner has not found an audio device in the specification that satisfies these limitations. Figure 3A depicts loudspeakers 18LF,18CF,18RF,18LS,18LC,18RS and 20 inside said listening area and outside said first of said listening spaces. Speaker #20, is a non-directional loudspeaker however reproduces audio signals in the bass frequency range (see; Spec. pg.11 ln.17-20). Speakers #18, reproduce signals in a non-bass frequency range, however are directional. The directionality of loudspeakers with respect to frequency has been discussed with the Applicant in an interview on October 7, 2008. It is well known that middle to high frequency range loudspeakers such as speaker #18 contain a directional characteristic. In view of the above, neither loudspeaker #20 or #18 meets the disclosure of the present claim language.

Claims 1 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The currently amended claim language contains new matter that was not disclosed in the original disclosure. Specifically, "a nondirectional audio device ..., for radiating sound waves corresponding to spectral components in a second **non-bass** frequency range".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) and in further view of Wiener et al (US 6,055,320).

With respect to claim 1, Scofield discloses an audio system including a plurality of channels (fig.3 #54,56) intended to be radiated by an audio device in a predetermined positional relationship to a listener, comprising: a listening area (fig.3 #64), comprising a plurality of listening spaces (fig.3 "spaces occupied by listeners #26"); a directional audio device (fig.3 #58,60), positioned in a first of said listening spaces, close to a head of the listener (fig.3 #26), for radiating first sound waves corresponding to spectral components in a first frequency range of a first of said channels; and a nondirectional audio device (fig.3 #52), positioned inside said listening area and outside said listening space, distant from said listening space, for radiating sound waves corresponding to spectral components in a second frequency range of a second of said channels (col.4 ln.58-63).

Scofield does not disclose expressly wherein the first frequency range substantially overlaps with the second frequency range, however Scofield does teach signals above 250Hz are supplied to speakers 58 and 60 and signals below 250Hz are supplied to speaker 52.

Bakgaard discloses a woofer (fig.1 #2) and tweeter (fig.1 #4) system with a crossover frequency of 500Hz. Bakgaard teaches that in an ideal system the crossover network (fig.1 #6) should be able to sharply divide the input signal at 500Hz, however in practice this is not possible. In order to remedy this problem frequency ranges are overlapped as shown in figure 2 to achieve a flat frequency response (col.1 ln.53-68, col.2 ln.1-4). At the time of the invention it would have been obvious to a person of ordinary skill in the art to overlap frequency ranges of the loudspeaker of Scofield as taught by Bakgaard. The motivation for doing so would have been to achieve a flat frequency response without gaps at the crossover frequency.

Scofield does not disclose expressly wherein the directional audio device comprises at least one of: a structure comprising barriers or at least two radiating elements that radiate sound waves that destructively interfere more in some directions than in others.

Wiener discloses a directional audio device (fig.1) that comprises a structure comprising barriers (fig.1 #24,28) that cause sound waves to radiate with more amplitude in some directions than in other directions over a wide range of frequencies (col.4 ln.53-60). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the barriers of Wiener in the directional audio device of

Scofield. The motivation for doing so would have been to limit sound dispersion such that listeners in adjacent listening spaces can not hear undesired dispersed sound.

With respect to claim 5, Scofield discloses an audio system in accordance with claim 1, wherein said listening area comprises a theater and said first and second listening spaces comprise seating locations within said theater (col.1 ln.33-36).

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) in view of Wiener et al (US 6,055,320) and in further view of Iwahara (US 4,199,658).

With respect to claim 2, Scofield discloses an audio system in accordance with claim 1, wherein said directional audio devices comprise a plurality of acoustic drivers (fig.3 #58,60), however does not disclose expressly wherein said acoustic drivers are positioned and arranged to radiate sound waves that interfere destructively at a first predetermined location in space and to interfere nondestructively at a second predetermined location in space.

Iwahara discloses an audio system wherein a plurality of acoustic drivers (fig.1 #1-4) are positioned and arranged to radiate sound waves that interfere destructively at a first predetermined location in space and to interfere nondestructively at a second predetermined location in space (col.1 ln.37-68, col.2 ln.1-2).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the crosstalk cancellation system of Iwahara in the invention of

Scofield. The motivation for doing so would have been to cancel inter-aural interferences between the right and left ears of a listener.

With respect to claim 3, Scofield discloses an audio system in accordance with claim 2 in view of Iwahara, wherein said first predetermined location is in a first listening space and said second predetermined location is in a second listening space (Iwahara: col.1 ln.57-66).

With respect to claim 4, Scofield discloses an audio system in accordance with claim 2 in view of Iwahara, wherein said first predetermined location is proximate a first volume for receiving a first ear of a listener and wherein said second predetermined location is proximate a second volume for receiving a second ear of said listener (Iwahara: col.1 ln.57-66).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) in view of Wiener et al (US 6,055,320) and in further view of Fabry (US 7,164,773 B2).

With respect to claim 6, Scofield discloses an audio system in accordance with claim 1, however does not disclose expressly wherein said listening area comprises a vehicle passenger compartment and said listening locations comprise seating locations within said vehicle passenger compartment.

Fabry discloses an audio system to be mounted within an automobile (see figure).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the audio system of Scofield in the automobile Fabry. The motivation for doing so would have been to provide a virtual sound system within the cabin of a vehicle so as to provide a realistic reproduced sound to a passenger.

Claims 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321).

With respect to claim 42, Scofield discloses an audio system including a plurality of channels (fig.3 #54,56) intended to be radiated in a predetermined positional relationship to the a listener, comprising: a listening area (fig.3 #64) comprising a plurality of listening spaces (fig.3 "spaces occupied by listeners #26"); a directional audio device (fig.3 #58,60) comprising at least two radiating elements radiating sound waves that destructively interfere more in some directions than the sound waves destructively interfere in other directions, the directional audio device being positioned in a first of said listening spaces, close to a head of the listener (fig.3 #26), for radiating first sound waves corresponding to spectral components in a first non-bass frequency range of a first of said channels; and a nondirectional audio device (fig.3 #52), positioned inside said listening area and outside said first of said listening spaces, distant from said first of said listening spaces, for radiating sound waves corresponding to spectral components in a second non-bass frequency range of a second of said channels (col.4 ln.58-63). From figure 4 of Scofield it is clear that signals from audio

devices #58,60 could interfere or create crosstalk however only in some directions, such as towards the rear of the listeners head.

Scofield does not disclose expressly wherein the first frequency range substantially overlaps with the second frequency range, however Scofield does teach signals above 250Hz are supplied to speakers 58 and 60 and signals below 250Hz are supplied to speaker 52.

Bakgaard discloses a woofer (fig.1 #2) and tweeter (fig.1 #4) system with a crossover frequency of 500Hz. Bakgaard teaches that in an ideal system the crossover network (fig.1 #6) should be able to sharply divide the input signal at 500Hz, however in practice this is not possible. In order to remedy this problem frequency ranges are overlapped as shown in figure 2 to achieve a flat frequency response (col.1 ln.53-68, col.2 ln.1-4). At the time of the invention it would have been obvious to a person of ordinary skill in the art to overlap frequency ranges of the loudspeaker of Scofield as taught by Bakgaard. The motivation for doing so would have been to achieve a flat frequency response without gaps at the crossover frequency.

With respect to claim 43, Scofield discloses an audio system in accordance with claim 42, wherein said first direction is toward a first listening space and said second direction is toward a second listening space (fig.3).

With respect to claim 44, Scofield discloses an audio system in accordance with claim 42, wherein said first direction is toward a first volume occupied during use of the audio system by a first ear of a listener, and wherein said direction is toward a second volume occupied during use of the audio system by a second ear of said listener (fig.3).

With respect to claim 45, Scofield discloses an audio system in accordance with claim 42, wherein said listening area comprises a theater and said first and second listening spaces comprise seating locations within said theater (col.1 ln.33-36).

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scofield (US 6,853,732 B2) in view of Bakgaard (US 4,031,321) and in further view of Fabry (US 7,164,773 B2).

With respect to claim 46, Scofield discloses an audio system in accordance with claim 42, however does not disclose expressly wherein said listening area comprises a vehicle passenger compartment and said listening locations comprise seating locations within said vehicle passenger compartment.

Fabry discloses an audio system to be mounted within an automobile (see figure).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the audio system of Scofield in the automobile Fabry. The motivation for doing so would have been to provide a virtual sound system within the cabin of a vehicle so as to provide a realistic reproduced sound to a passenger.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON R. KURR whose telephone number is (571)272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Kurr/

Examiner, Art Unit 2614

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2614